[CLAIMS]

1. (CURRENTLY AMENDED) A nasal cannula for supplying a respiratory gas to a patient, the nasal cannula comprising:

a pair of supply lines which each have a head adjacent a leading end thereof with a discharge opening therein for discharging a respiratory gas, and an opposite end of each of the pair of supply lines being connectable to a respiratory gas source;

wherein each head is formed integrally with and from the same material as the pair of supply line and each head comprises a leading tapered section and a trailing cylindrical section, the cylindrical section having a generally cylindrical surface which is sized to be snugly received and retained within one of the nasal cavities of the patient, an exterior surface of each head has a plurality elongate troughs formed therein, and each of the plurality of elongate troughs extends parallel to one another and is formed in the generally cylindrical surface of the head;

and the plurality elongate troughs form, once insert into the respective nasal cavity, a plurality of leakage passages, between a portion of inwardly facing nasal cavity skin of the patient and the plurality elongate troughs of the head, to facilitate exhausting of excess respiratory gas supplied to the patient through the leakage passage while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient; and

the pair of supply lines being connected with one another by a central bridge member having an axial length that spans no more than a width of a philtrum of the patient.

2. (CANCELED).

3. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein the exterior surface of the head has between six and eight elongate troughs formed therein which are equally spaced about a circumference of the head, and each of the elongate troughs partially defines one of the leakage passages in the head to facilitate exhausting of the excess respiratory gas and inhalation of any room air required by the patient.

4. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges to partially define one of the plurality of leakage passages.

5. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein each one of the leakage passages has a cross sectional open area of between about 0.002 square inches (0.013 cm^2) and 0.0055 square inches (0.035 cm^2).

6. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm).

7. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein an upper surface of the central bridge member is rounded to avoid any sharp edge that may contact with a nasal septum of the patient.

8. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein the supply lines and the heads are manufactured from a flexible material; and

a second end of each of the supply lines bends away from one another.

9. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 7, wherein the second end of each of the supply lines is coupled to an auxiliary respiratory gas supply line, and at least the second end of each of the supply lines is curved to pass beneath a patient's cheekbone area when the nasal cannula is donned by a patient.

10. (PREVIOUSLY PRESENTED) The nasal cannula according to claim 1, wherein the central bridge member aligns the pair of supply lines parallel to one another to facilitate insertion of the heads, carried by the ridge of the pair of supply lines, within the nostrils of the patient, and each of the supply lines initially extends away from the central bridge member and then bends into a curved configuration having a radius of curvature of between about 0.4 inch to about 0.8 inch which creates a minimal pressure drop, turbulence and noise generation at a maximum flow rate.

11. (CURRENTLY AMENDED) A nasal cannula assembly for supplying a respiratory gas to a patient, the nasal cannula assembly comprising:

a pair of supply lines which each have a head adjacent a leading end thereof with a discharge opening therein for discharging a respiratory gas, and an opposite end of each of the pair of supply lines being connected to an auxiliary respiratory gas supply line; and a remote end of each of the auxiliary respiratory gas supply line is connected with a respiratory gas source for supplying the respiratory gas to the patient;

wherein each head is formed integrally with and from the same material as the pair of supply line and each head comprises a leading tapered section that communicates directly with a trailing cylindrical section, the cylindrical section being longer in axial length than the tapered section, the cylindrical section having a generally cylindrical surface which is sized to be snugly received and retained within one of the nasal cavities of the patient, an exterior surface of each head has a plurality elongate troughs formed therein, and each of the plurality of elongate troughs extends parallel to one another and is formed in the ~~generally cylindrical~~ surface of the tapered section and the cylindrical section of the head;

and the plurality elongate troughs form, once insert into the respective nasal cavity, a plurality of leakage passages, between a portion of inwardly facing nasal cavity skin of the patient and the plurality elongate troughs of the head, to facilitate exhausting of excess respiratory gas supplied to the patient through the leakage passage while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient; and

the pair of supply lines being connected with one another by a central bridge member ~~having an axial length that spans no more than a width of a philtrum of the patient~~.

12. (CANCELED).

13. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein the exterior surface of the head has between six and eight elongate troughs formed therein which are equally spaced about a circumference of the head, and each of the elongate troughs partially defines one of the leakage passages in the head to facilitate exhausting of the excess respiratory gas and inhalation of any room air required by the patient.

14. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein each of the plurality elongate troughs is formed by a pair of adjacent planar side surfaces which diverge away from a common elongate valley toward a pair of spaced apart but adjacent elongate ridges to partially define one of the plurality of leakage passages.

15. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein each one of the leakage passages has a cross sectional open area of between about 0.002 square inches (0.013 cm^2) and 0.0055 square inches (0.035 cm^2).

16. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein each head has a maximum width dimension of between about 0.345 of an inch (0.88 cm) about 0.70 of an inch (1.8 cm) and a length of between about 0.30 of an inch (0.76 cm) and about 0.60 of an inch (1.5 cm).

17. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein, the central bridge member is formed integral with and from a same material as the supply lines and the heads.

18. (PREVIOUSLY PRESENTED) The nasal cannula assembly according to claim 11, wherein the nasal cannula is manufactured from a flexible material; and

a second end of each of the supply lines bends away from one another and is curved.

19. (CURRENTLY AMENDED) The nasal cannula assembly according to claim 11, wherein the second end of each of the supply lines is coupled to an auxiliary respiratory gas supply line, and at least the second end of each of the supply lines is curved to pass beneath a patient's cheekbone area when the nasal cannula is donned by a patient, and the head defines an through aperture, radially spaced from an interior of the supply line and parallel to and spaced from the to the plurality of elongate troughs.

20. (WITHDRAWN) The nasal cannula assembly according to claim 1, wherein

the nasal cannula is connected to a source of respiratory gas for supplying a respiratory gas to a patient;

a nasal cannula connected to the source of respiratory gas for receiving the respiratory gas and supplying the respiratory gas to nostrils of a patient;

the nasal cannula comprising:

a pair of supply lines which each have a head adjacent a leading end thereof with a discharge opening therein for discharging a respiratory gas, and an opposite end of each of the pair of supply lines being connected to an auxiliary respiratory gas supply line; and a remote end of each of the auxiliary respiratory gas supply line is connected with a respiratory gas source for supplying a respiratory gas to a patient;

wherein each head is formed integral with and from the same material as the supply line and sized to be snugly received and retained within one of the nasal cavities of the patient while forming a plurality of leakage passages therewith, an exterior surface of the head having a plurality of elongate troughs formed therein for partially defining the plurality of leakage passages between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head and facilitate exhausting of excess respiratory gas supplied to the patient through the leakage passage while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient.

21. (WITHDRAWN) The nasal cannula assembly according to claim 20, wherein the nasal cannula assembly further includes a heater for heating the respiratory gas to a desired temperature prior to delivering the respiratory gas to the patient.

22. (WITHDRAWN) The nasal cannula assembly according to claim 20, wherein the nasal cannula assembly further includes a humidifier for supplying humidity to the respiratory gas prior to delivering the respiratory gas to the patient.

23. (WITHDRAWN) The nasal cannula assembly according to claim 20, wherein the nasal cannula assembly further includes a heater for heating the respiratory gas to a desired temperature prior to delivering the respiratory gas to the patient; and

the nasal cannula assembly further includes a humidifier for supplying humidity to the respiratory gas prior to delivering the respiratory gas to the patient.

24. (WITHDRAWN) The nasal cannula assembly according to claim 23, wherein a humidity sensor and a temperature sensor are coupled to a controller to provide inputs concerning the humidity and the temperature of the respiratory gas, and

the controller controls operation of the humidifier and the heater to control the temperature and the humidity of the respiratory gas prior to delivery to the patient.

25. (WITHDRAWN) The nasal cannula assembly according to claim 24, wherein the nasal cannula assembly provide the respiratory gas at a relative humidity of between about 70 percent and 100 percent and a temperature of between about 80°F (26.6°C) and about 90°F (32.2°C).

26. (WITHDRAWN) The nasal cannula assembly according to claim 20, wherein the nasal cannula assembly provides a variable flow of respiratory gas, during operation of the nasal cannula assembly, of between about 20 and 120 liters per minute.

27. (WITHDRAWN) The nasal cannula assembly according to claim 20, wherein the nasal cannula assembly further includes a respiratory gas metering device to facilitate conservation of use of the respiratory gas during operation of the nasal cannula assembly.

28. (WITHDRAWN) The nasal cannula assembly according to claim 20, wherein the respiratory gas supply lines and the nasal cannula each have gradual bends, transitions, expansion and contraction therealong so that the respiratory gas, as the respiratory gas flows from the source of respiratory gas to the nasal cannula, minimizes generation of noise.

29. (WITHDRAWN) A method of treating a patient with sleep disorder with a respiratory gas, the method comprising the steps of:

inserting prongs of a nasal cannula within respective nostrils of the patient;

supplying a respiratory gas to the nasal cannula at a constant flow rate sufficient to form a back pressure within the breathing passageways of the patient, at least when the patient is exhaling; and

allowing, at least during exhalation, a portion of the supplied respiratory gas to leak from the nostril between the prongs of the nasal cannula and inwardly facing skin of the nostril.

30. (WITHDRAWN) The method of treating the patient with sleep disorder according to claim 29, further comprising the steps of using oxygen as the respiratory

gas and supplying the oxygen a flow rate of between about 20 and 120 liters per minute.

31. (WITHDRAWN) The method of treating the patient with sleep disorder according to claim 29, further comprising the steps of forming each prong of the nasal cannula with a head at one end thereof having a discharge opening therein for discharging the respiratory gas, and the opposite end of each prong is coupled to a supply line which is connected to a respiratory gas source; and each head is sized to be snugly received and retained within one of the nasal cavities of the patient while forming a sufficient leakage passage, between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head, to facilitate exhausting of any excess respiratory gas supplied to the patient through the leakage passage and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient.

32. (WITHDRAWN) The method of treating the patient with sleep disorder according to claim 29, further comprising the step of heating the respiratory gas to a desired temperature prior to delivering the respiratory gas to the patient.

33. (WITHDRAWN) The method of treating the patient with sleep disorder according to claim 29, further comprising the step humidifying the respiratory gas prior to delivering the respiratory gas to the patient.

34. (WITHDRAWN) The method of treating the patient with sleep disorder according to claim 29, further comprising the steps of:

heating the respiratory gas to a desired temperature; and

humidifying the respiratory gas to desired humidity prior to delivering the respiratory gas to the patient.

35. (WITHDRAWN) The method of treating the patient with sleep disorder according to claim 29, further comprising the step of interrupting the constant flow rate of the respiratory gas, with a metering device, to facilitate conservation of the respiratory gas during treatment of the patient with sleep disorder .

36. (WITHDRAWN – PREVIOUSLY AMENDED) A nasal cannula for measuring nasal cavity pressure of a patient, the nasal cannula comprising:

a pair of supply lines which each have a head adjacent a leading end thereof with a discharge opening therein for discharging a respiratory gas, and an

opposite end of each of the pair of supply lines being connectable to a respiratory gas source;

each head being formed integral with and from the same material as the supply line and comprises a generally cylindrical surface which sized to be snugly received and retained within one of the nasal cavities of the patient while forming a plurality of leakage passages therewith, an exterior surface of the head having a plurality of elongate troughs formed therein, with each of the plurality of elongate troughs extending parallel to, but spaced from, a longitudinal axis defined by a tubular extension;

each tubular extension having a generally cylindrical exterior surface with a smaller circumference than each head, each tubular extension being integrally formed with and from the same material as each head, and each tubular extension axially spacing each respective head from each respective leading end;

the plurality of elongate troughs for partially defining the plurality of leakage passages between a portion of inwardly facing nasal cavity skin of a patient and a portion of an exterior surface of the head and facilitate exhausting of excess respiratory gas supplied to the patient through the leakage passage while maintaining a positive pressure within a respiratory passage of the patient at least during exhalation by the patient and also facilitate inhalation of any room air required in excess of the respiratory gas to be supplied to the patient;

a pressure sensing probe associated with each head; and

each of the pressure sensing probes is coupled to supply a pressure reading to a pressure sensing device.

37. (WITHDRAWN) The nasal cannula according to claim 36, wherein each of the pressure sensing probes is coupled to a single common pressure sensing device.

38. (WITHDRAWN) The nasal cannula according to claim 36, wherein each of the pressure sensing probes is coupled to separate pressure sensing device.

39. (WITHDRAWN) The nasal cannula according to claim 36, wherein the pressure sensing device is a transducer.

40. (WITHDRAWN) The nasal cannula according to claim 36, wherein each of the pressure sensing probes is permanently secured to the head to fix an exposed

length of the pressure sensing probes relative to respiratory gas discharge outlets of the head.

41. (WITHDRAWN) The nasal cannula according to claim 36, wherein each of the pressure sensing probes is adjustably secured to the head to facilitate adjustment of an exposed length of the pressure sensing probes relative to respiratory gas discharge outlets of the head.

42. (WITHDRAWN) The nasal cannula according to claim 36, wherein each of the pressure sensing probes passes through an interior space of one of the heads.

43. (CANCELED).

44. (CURRENTLY AMENDED) A nasal cannula for supplying a respiratory gas to a patient, the nasal cannula comprising:

a pair of supply lines which each have an integral head at ~~one~~ a first end thereof with a discharge opening therein for discharging a respiratory gas to the patient, and the opposite end of each of the pair of supply lines being connectable to a respiratory gas source;

a central bridge member, located adjacent the heads, for aligning the pair of supply lines one another and facilitate insertion of the heads within the nostrils of the patient; and

each head being larger in size than the supply line and each head being formed integrally with and from the same material as the supply line and the bridge;

wherein each head is comprised of a first tapered section that communicates directly with a cylindrical section, that communicates directly with a second tapered section, the cylindrical section is longer in axial length than the either tapered section, the first tapered section is proximate to but axially spaced from the first end of the supply line, the cylindrical section having a cylindrical exterior surface ~~of each head has~~, which has a maximum outside diameter that is slightly larger than an interior diameter of a nasal cavity of the patient in which the head is to be received so that each head is sized to be snugly received and retained within one of the nasal cavities of the patient, the exterior surface of the head has a plurality elongate troughs formed therein so as to defined with a portion of inwardly facing nasal cavity skin the patient a plurality of leakage passages which facilitate exhausting of excess respiratory gas through the leakage passages while maintaining a positive pressure within a

respiratory passage of the patient at least during exhalation by the patient, and each of the plurality of elongate troughs extends parallel to one another and is formed in the generally cylindrical surface of the head.